Living with Diabetic Kidney Disease

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JOSLIN DIABETES CENTER

American Kidney Fund®
Thanks to our speaker!

- Sue-Ellen Anderson Haynes
- Registered Dietitian Nutritionist and Certified Personal Trainer with interest and specialties in diabetes management
- Works at Joslin Diabetes Center as a Nutrition Educator
THE ROLE OF OUR KIDNEYS, AND HOW CHRONIC KIDNEY DISEASE (CKD) AND DIABETES ARE CONNECTED.

THE RISK FACTORS, AND WAYS OF PREVENTING DIABETIC KIDNEY DISEASE (DKD).

LIFESTYLE APPROACHES, INCLUDING NUTRITION THERAPY, FOR MANAGING AND IMPROVING DKD.
What Do The Kidneys Do?

- Remove waste
- Regulate water balance
- Balance chemicals
- Produce hormones
- Maintain bone health
How are CKD and Diabetes connected?

- **Diabetes**
  - Blood sugar (glucose) control according to the American Diabetes Association (ADA):
    - fasting 70-130 mg/dL and 2 hrs after meals are less than 180mg/dL
    - A1C less than 7
  - High blood glucose, poor control
    - Fasting BG >130mg/dL, 2hrs after a meal >180mg/dL
    - A1C greater than 7
    - Values that are consistently out of range
      - Leads to kidney (renal) disease
How are CKD and Diabetes connected?

- Heart problems
- Eye issues
- Poor circulation and healing
- Lowered kidney function *
How are CKD and Diabetes connected?

- **eGFR (Glomerular Filtration Rate)**
  - Shows how well your kidneys are currently filtering waste
  - The value does not improve
  - Normal GFR is about 100-130

- **Albumin/Creatinine**
  - Measure of how much protein is in your urine
  - Less protein in urine, less damage to kidneys
  - Normal range is under 30 mcg/mg
  - 30-300 microalbuminuria, 300 or more macroalbuminuria
  - Can improve with medication
How are CKD and Diabetes connected?

- CKD can be identified in two ways
  - Kidney damage over 3 months
    - structure or functional changes of the kidney with/without elevated GFR + urine/blood test abnormalities
  - With/without kidney damage for 3 months or more + GFR <60

- CKD has 5 stages (1 to 5)
  - Stages get progressively worse as kidney damage increases and GFR decreases
  - Stage 5 is kidney failure
    - GFR < 15 (or dialysis)
Complications of Kidney Disease

- Lowered Kidney Function may include:
  - Iron deficiency anemia
  - Mineral-bone disease
  - Hyperkalemia
    - Too much potassium - affects the heart
  - Toxic build-up
  - Swelling and fluid retention
So what is Diabetic Kidney Disease (DKD)?

“LONGSTANDING AND/OR POORLY CONTROLLED DIABETES THAT CAN RESULT IN A TYPE OF CKD KNOWN AS DIABETIC KIDNEY DISEASE”
Diabetic Kidney Disease (DKD)

- Involves:
  - protein in urine (macro-albuminuria),
  - worsening high blood pressure
  - poor blood glucose control
  - genetic background
Risk factors for DKD

- Race
  - Rate is increasing among Native American, Hispanic, and Black cultures
  - Blacks 36x more likely than whites

- Diabetes

- Genetics
  - Family history

- Age

- Smoking

- Existing complications from diabetes
  - Eye or nerve damage increase likelihood
Preventing and Managing DKD

- Screening
  - Urine test
  - Blood test
  - Lipid levels
  - Hemoglobin
  - Blood markers for bone and mineral health
Preventing and Managing DKD

**Monitoring**
- Check your blood pressure
  - <140/80, with DKD <130/80 or < 130/70
- Check blood glucose and log your numbers
  - A1C <7
  - Fasting Goal: 70-130 or 90-130
  - 2-hours Post Meal: < 180
    - These values may vary with dialysis
- Use Continuous Glucose Monitor (CGM) if needed
- Your health care team will monitor certain labs 2-3 times/year
- Lifestyle and diet modification
How do you manage or improve DKD?

LIFESTYLE CHANGES
Nutrition and Diabetes

Foods that affect blood sugar

- Protein → Minimal effect on blood glucose (sugar)
- Carbohydrate → Large effect on blood glucose
- Fat → Large amounts can affect blood glucose later on
**Milk and Fruit**
Add an 8 oz. glass of non-fat or low fat milk or 6 oz. of non-fat or low fat yogurt and a small piece of fruit.

**Carbohydrate**
Fill a quarter of your plate with brown rice, sweet potato, whole-grain pasta or bread, or corn or whole-wheat tortillas.

**Vegetables**
Fill half of your plate with colorful vegetables like broccoli, green beans, spinach, beets, carrots, zucchini or tomatoes. Prepare them without fat by steaming.

**Protein**
Fill a quarter of your plate with chicken, fish, lean meat, low fat cheese, tofu or egg whites. Remove any visible fat or skin before cooking.

**Fat**
Add 1-2 teaspoons of a heart-healthy fat, such as vegetable oil or trans-fat-free margarine.
Nutrition and Diabetes

• Carbohydrate Foods
  ○ Bread
  ○ Cereal
  ○ Pasta
  ○ Rice/Grains
  ○ Starchy Vegetables
  ○ Fruit
  ○ Beans
  ○ Juice
  ○ Soda
  ○ Sugary Desserts
# Carbohydrate Counting

## Joslin Diabetes Center

### Food Choice List

<table>
<thead>
<tr>
<th>Carbohydrate Choices – 15 grams carb per serving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breads, Cereals &amp; Grains</strong></td>
</tr>
<tr>
<td>1 slice bread (1 oz.)</td>
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<tr>
<td>2 slices low-calorie bread</td>
</tr>
<tr>
<td>¼ large bagel (1 oz.)</td>
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<tr>
<td>6” tortilla or pita bread</td>
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<tr>
<td>¼ English muffin</td>
</tr>
<tr>
<td>½ cup cooked cereal</td>
</tr>
<tr>
<td>¼ cup avg. dry cereal</td>
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<tr>
<td>¼ cup cooked rice/pasta</td>
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<tr>
<td>1 cup soup</td>
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<table>
<thead>
<tr>
<th>Crackers/Snacks</th>
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<tbody>
<tr>
<td>3 cups air-popped popcorn</td>
</tr>
<tr>
<td>18-20 mini pretzels</td>
</tr>
<tr>
<td>5-8 regular pretzel twists</td>
</tr>
<tr>
<td>2-5 whole grain crackers</td>
</tr>
<tr>
<td>3 graham crackers</td>
</tr>
<tr>
<td>2 rice cakes, 4” across</td>
</tr>
<tr>
<td>9-13 potato chips</td>
</tr>
<tr>
<td>9-13 tortilla chips</td>
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<tr>
<td></td>
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<tr>
<td><strong>Milk</strong></td>
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<td>----------------</td>
</tr>
<tr>
<td>1 cup milk (fat-free/skim, 1% milk, 2%, whole, lactose-free)</td>
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<tr>
<td>6 oz. light-style yogurt</td>
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<tr>
<td>6 oz. plain yogurt</td>
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<tr>
<td>½ cup evaporated skim milk</td>
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<tr>
<td>½ cup dry fat-free milk</td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Desserts/Sweets</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>1 Tbsp. jam/jelly</td>
</tr>
<tr>
<td>1 Tbsp. jam/jelly</td>
</tr>
<tr>
<td>2 small tangerines</td>
</tr>
<tr>
<td>½ cup (4 oz.) juice</td>
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</tbody>
</table>

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Typical Carbohydrate Requirement

- Male: 45-60/meal, 15-20/snack
- Female: 30-45/meal, 15/snack
Lifestyle Changes

- Counting carbohydrates
- Measuring food
- Eat more meals from home
- Exercise!
  - 150 min/week moderate intensity exercise
  - Strength training
  - Walk after meals
What does having diabetes and kidney disease mean?

- Same principles as managing your diabetes
  - Medication
  - Monitoring
  - Modification of diet and lifestyle

- Slight changes to:
  - Medication → Some may be added or removed
  - Monitoring → Your provider will monitor additional labs
  - Modification → Food intake will change slightly
Dietary Concerns for patients with Kidney Disease

- Sodium
- Fluid
- Protein
- Potassium
- Phosphorus
Modification of Food Intake

- **Same balanced plate**
- Choose fresh foods from home
- Carbohydrate choice may change
- Vegetable choice may change
- Fruit choice may change
- Dairy products may be limited
- Protein may be restricted
## Low Sodium Diet

<table>
<thead>
<tr>
<th>Low Sodium Foods</th>
<th>High Sodium Foods</th>
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</thead>
<tbody>
<tr>
<td>Fresh fruits</td>
<td></td>
</tr>
<tr>
<td>Fresh Vegetables</td>
<td></td>
</tr>
<tr>
<td>Low sodium canned goods</td>
<td>Campbell Soup</td>
</tr>
<tr>
<td>Grilled, Roasted meats</td>
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</tbody>
</table>

**Tips:** Cook fresh foods, limit packaged products, be aware when dining out, stick to the basics, choose low salt soups and canned goods
Fluid

- Needs depend on
  - Stage of kidney disease
  - Blood pressure
  - Swelling present

- Fluid Intake
  - Liquid at room temp
  - Water
  - Juice
  - Soda
  - Coffee, Tea
  - Broth
  - Ice cubes
Protein

- Protein may be limited – ask your provider
- What are protein foods?
  - Walk/Roam
  - Swim
  - Fly
  - Vegetarian
- Protein Serving = 3-4 oz.
  - 1 oz. protein = 7 g
  - 3 oz. = 21g = deck of cards
Low Potassium Foods
< 120mg / serving

High Potassium Foods
> 250mg / serving
## Tips for Reducing Phosphorus

<table>
<thead>
<tr>
<th>Try eating:</th>
<th>Instead of:</th>
</tr>
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<tbody>
<tr>
<td>1 cup unenriched rice milk</td>
<td>1 cup milk</td>
</tr>
<tr>
<td>1 oz. cream cheese</td>
<td>1 oz. cheddar cheese</td>
</tr>
<tr>
<td>1 oz. Neufchatel cheese</td>
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</tr>
<tr>
<td>½ cup pudding made with nondairy</td>
<td>½ cup pudding</td>
</tr>
<tr>
<td>creamer</td>
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</tr>
<tr>
<td>12 oz. diet ginger ale, or lemon-</td>
<td>12 oz. diet cola</td>
</tr>
<tr>
<td>lime soda</td>
<td></td>
</tr>
<tr>
<td>½ cup cream of wheat</td>
<td>½ cup oatmeal</td>
</tr>
<tr>
<td>½ cup corn or rice cereal</td>
<td>½ cup bran cereal</td>
</tr>
<tr>
<td>Unsalted popcorn or pretzels</td>
<td>Handful of nuts</td>
</tr>
</tbody>
</table>
# Sample Renal Diet

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
</table>
| **Breakfast (45g carb)** | White toast, 2 slices  
Trans fat free margarine, 1 tbsp.  
Cranberry juice, 1/3 cup  
Coffee/Tea, 8 oz. | Cornflakes, 1 cup Unenriched rice milk (or non-dairy creamer), 1/2 cup Plums, 2  
Coffee/Tea 8 oz. |
| **Lunch (45 g carb)** | Grilled salmon, 3 oz.  
2/3 cup pasta  
Mixed green salad, 1 cup  
Oil and vinegar dressing, 2 tbsp.  
Grapes, 15 medium  
Diet ginger ale, 8 oz. | Tuna Sandwich:  
Low sodium/water packed Tuna, 3 oz.  
Mayonnaise, 1 tbsp.  
Chopped onions, 1 tbsp.  
Chopped celery, 1 tbsp.  
Kaiser roll, 1  
Apple, 1 medium  
Diet lemonade, 8 oz. |
| **Snack (15 g carb)** | 1 pear | Fruit cocktail, 1/2 cup |
| **Dinner (60 g carb)** | Broiled garlic shrimp, 4 oz.  
Rice, 2/3 cup  
Asparagus, 4 spears  
Dinner roll, 1  
Trans fat free margarine, 1 tbsp  
Pineapple chunks, 1/2 cup  
Diet root beer, 8 oz. | Baked pork chop, 4 oz.  
Noodles, 2/3 cup  
Steamed broccoli, 1/2 cup  
French bread, 1 slice  
Trans fat free margarine, 1 tbsp  
Cherries, 1 cup  
Water, 8 oz. |
| **Snack (15 g carb)** | Graham crackers, 3 squares | Vanilla wafers, 6 |
Summary

- Get regular check ups to monitor lab values & BP
- Take your medication(s) as prescribed
- Improve blood glucose control & monitor BG daily
- Lower your blood pressure
- Follow your meal plan and adjust when needed
- Exercise regularly and maintain a healthy weight
- Stop smoking
Questions?
Join us for next month’s webinar!  

Paired Kidney Exchanges and Opportunities for Kidney Transplant in Minority Patients  

Friday, December 9  
1-2 p.m. (ET)  

Join us to learn about:  

• The paired kidney exchange process  
• ABO compatibility in transplantation  
• The need for more live donor kidney transplants in the minority community  

Go to www.KidneyFund.org/webinars to learn more and register!